

Sustaining Water Quality

240th ACS National Meeting & Exposition
Boston, MA
August 22-26, 2010
Abstract Deadline: March 22, 2010

Water is the second most essential material for human survival. Even though Earth is composed largely of water, fresh water comprises only 3% of the total water available to us. Of that, only 0.06% is easily accessible. As a result, an estimated 1.2 billion people in the world drink unclean water because they have limited access or resources to procure clean water.

Information on water quality is critical to ensure long-term availability and sustainability of water that is safe for drinking and recreation and is suitable for industry, irrigation, and fish and wildlife. It is time for us to take stock of where we have come from and where we are headed regarding water quality, particularly because challenges before us are increasingly complex. First, the overwhelming majority of water-quality problems are now caused by diffuse nonpoint sources of pollution from agricultural land, urban development, forest harvesting, and the atmosphere. These nonpoint-source contaminants are more difficult to effectively monitor, evaluate, and control than those from point sources (such as discharges of sewage and industrial waste). Concentrations can vary hour to hour and season to season, making it difficult to monitor and quantify possible effects on human and aquatic ecosystem health. A second challenge facing us is the emerging diversity in water-quality issues. Forty years ago, determining factors about water quality focused largely on sanitary quality of rivers and streams. For example in the US, we were interested in bacteria counts, oxygen levels in the water, nutrients, and a few measurements like temperature and salinity. While these are still important, over the last 30 years the issues have become increasingly complex. There are now hundreds of synthetic organic compounds, like pesticides and volatile organics in solvents and gasoline, introduced into the environment. Over the last 10 years, improved laboratory techniques have led to the discovery of microbial and viral contaminants, pharmaceuticals, and endocrine disruptors in our waters that weren't measured before. We are also finding that many contaminants (such as arsenic and radon) can originate from a wide range of natural sources, which can be of potential concern for human health, even in relatively undeveloped settings that otherwise may be not be perceived as vulnerable to contamination. These natural and organic contaminants often end up in our waters as complex mixtures of organic compounds; many of these can, even at very low concentrations, potentially affect the health of humans and/or reproductive success of aquatic organisms.

Finally, water-quality issues are not solely determined by our activities on the landscape, but rather are governed, in part, by natural processes. Natural factors (such as hydrology, geology, and soils) control the transport of contaminants over the land and into the groundwater, along with our behavior — how we use and dispose of chemicals, how we convert our land over time, our use of water, and our practices of land -management. Sustaining the water quality of our resources will thereby advance only if we have data on contaminants, along with information on natural and human causative factors that affect water-quality conditions. They must be part of our investments in water monitoring and science.

The topics that will be covered in these sessions include, but are not limited to

- Status and trends in water quality (natural and human-related)
- Potential contaminants and sources of contamination
- Monitoring various contaminants, including pharmaceuticals and endocrine disruptors
- Chemical studies on contaminants
- Transport of contaminants
- Remediation of contaminated water supplies
- Treatment of wastewater

Please submit your abstracts to Environmental Chemistry division at <http://abstracts.acs.org>. Any other inquiries should be directed to Sut Ahuja.

Symposium Organizers

Satinder (Sut) Ahuja
Ahuja Consulting
1061 Rutledge Court NW
Calabash, NC 28467
Phone: 910 287 7565
Email: sutahuja@atmc.net

William Cooper
University of California
Irvine, CA 92697
Email: wcooper@uci.edu

Matthew Larsen
U.S. Geological Survey
Reston, VA 20192
Email: mclarsen@usgs.gov